

REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1-8 remain active in the application subsequent to entry of this amendment.

In the instructions given above, claims 9 and 10 have been withdrawn in order to resolve the issues raised on page 2, first and second paragraphs of the Official Action, and to advance prosecution.

Claims 1 to 3 stand rejected as obvious over U.S. Patent No. 6,210,836* (Takada et al) '836) or U.S. Patent No. 6,207,327* (Takada et al '327) or U.S. Patent No. 4,164,069 (Tomczuk '069) each in view of EP 0 802 161. Applicants disagree.

The object of the present invention was to provide an alternative economical synthesis of lithium transition metal sulphides that may be operated on a large scale. Applicants' technical solution was a radical and innovative step that has allowed prior art syntheses taking place at 750-950°C to be placed by one conducted at just over 100°C.

The technical solution was to think to conduct the reaction in the presence of molten sulphur, which allows the reaction to proceed quickly at lower temperatures. It is difficult to appreciate the lateral thinking that was involved in such a step. As explained above, prior art processes merely involved heating the two or three reactants together at extremely high temperatures. To think to employ another medium was not at all straightforward, particularly one that was not one of the actual reactants.

The three above-mentioned U.S. patent references relied upon by the Examiner are merely examples of the high temperature syntheses referred to above. As acknowledged between lines 8 and 14 on original page 2 of applicants' specification, lithium sulphide and ferrous sulphide powders were traditionally heated together at 750°C in an inert atmosphere to form lithium iron sulphide. This is a solid state reaction where the powders remain solid and the reaction can take up to a month. Alternatively, as in the three U.S. patent references, the reactants can be heated at even higher temperatures of

* Applied as of their actual U.S. filing dates under 35 U.S.C. § 102(e).

around 950°C, whereupon some of the reactants melt. However, those reactions are still costly and inconvenient because of the extreme operating conditions required.

None of the three documents teach heating the reactants in the presence of an additional medium or indeed, one that has been selected to have a lower melting temperature. By contrast, they teach reliance upon the use of very high operating temperatures to cause the actual reactants to melt, and in fact teach away from the present invention. Accordingly, it is unjustified to attempt to base an obviousness objection on those documents.

The other document relied upon by the Examiner, EP 0 802 161, also teaches the use of high operating temperatures (400 to 800°C -- line 52, col. 3) to produce a sulphide and as such does not remedy the defects in the other three references. And again, it does not teach the use of an additional medium but merely teaches heating the reactants together. In this case, sulphur and silicon are heated together to form silicon sulphide. It is submitted that that document has merely been cited **with the benefit of hindsight**; it is hardly surprising that that document uses molten sulphur when that is one of the two reactants.

In summary, applicants' claimed synthesis requires the presence of the two reactants and the additional presence of a different material, sulphur, as a molten medium. That allows the reaction to proceed at lower temperatures of the order of 150°C. By contrast, all four cited documents teach syntheses in which only the reactants are heated together. Since the prior art processes are all conducted at extremely high temperatures (e.g., 950°C), they also do not suggest the benefits achieved by the present invention. Accordingly, it is submitted that the skilled reader, even if they did choose to consider those documents in combination, would still not arrive at the present invention.

Product-by-process claims 7 and 8 have attracted a separate rejection based upon the three U.S. patents identified and discussed above. Applicants submit that these claims are also allowable as they have demonstrated the process limitations of claim 1

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patentably distinguish over the prior art as required by the Examiner on page 5, first paragraph, second sentence of the Official Action.

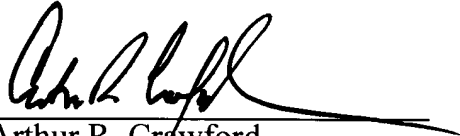
Claims 4-6 were objected to as being dependent from a rejected claim but otherwise allowable. Claim 4 is amended above to be in independent form by incorporating the features of claim 1, hence claims 4-6 are also in condition for allowance.

The allowance of the claims 1-8 is solicited.

Respectfully submitted,

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